CLAIMS

What is claimed is:

1. In a network having a master device and a plurality of slave devices in network communication with said master device, a Medium Access Control layer protocol for transmission and reception of network packets, comprising:

a Time Division Multiple Access frame definition having,

a start-of-frame section,

a command section,

a data slot section containing a plurality of variable length slots,

a synchronization slot, and

a timestamp slot.

2. The Medium Access Control layer protocol as recited in claim 1, wherein said protocol is configured to implement dynamic requisition of variable-length data slots within said frame.

3. The Medium Access Control layer protocol as recited in claim 2, wherein said protocol is configured to implement dynamic allocation of said variable-length data slots.

4. The Medium Access Control layer protocol as recited in claim 3, wherein said protocol is configured to implement dynamic reallocation of said variable-length data slots.

5. The Medium Access Control layer as recited in claim 1, wherein said master device and slave device are further configured to coordinate a scheduled switch from a first set of data slot parameters to second set of data slot parameters.

6. The Medium Access Control layer protocol as recited in claim 5, wherein said timestamp slot further comprises a bit-field which is incremented by a master timestamp counter.

7. The Medium Access Control layer protocol as recited in claim 6, wherein each of said slave devices is configured to maintain a local copy of said master timestamp counter.

8. The Medium Access Control layer protocol as recited in claim 1, wherein said variable-length data slots of said frame have a granularity of one bit.

9. A networking system, comprising:

a master device;

a plurality of slave devices in network communication with said master device;

a Medium Access Control layer protocol capable of transmission and reception of a plurality of network packets communicated between said master device and said slave devices; and

a Time Division Multiple Access frame definition having,

a data slot section containing a plurality of variable-length data slots,

a synchronization slot, and

a timestamp slot.

10. The networking system as recited in claim 9 further comprising a bit-field which is configured to be incremented by said master device in a modulo-N manner by a timestamp counter within said timestamp slot.

11. The networking system as recited in claim 10, wherein each of said slave devices is configured to provide a local copy of said master timestamp counter which allows slave devices to identify a scheduled frame time.

12. The network system as recited in claim 11, wherein each slave device is structured to coordinate a schedule switch from a first set of data slot parameters to a second set of data slot parameters.

13. A networking system as recited in claim 11, wherein said protocol further is structured to implement dynamic reallocation of said variable-length data slots.

14. A method for scheduling the assignment of variable length data slots in a network system having a master device and a plurality of slave devices in network communication with said master device, comprising;

providing a Time Division Multiple Access frame definition comprising a synchronization slot and a timestamp slot, and a data slot section having a plurality of variable-length data slots; and

determining a schedule time to communicate the assignment and reallocation of said variable-length data slots to each of said slave devices.

15. The method of claim 14, further comprising scheduling the assigning and reallocation from a first set of data slot parameters to a second set of data slot parameters with a scheduling frame transmitted at said scheduled time.

16. The method of claim 15, further comprising switching the data slot parameters for each participating slave device at said scheduled time.